
# FLASH IO Benchmark on NERSC Platforms

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The software used in this work was in part developed by the DOE-supported ASC / Alliance Center for Astrophysical Thermonuclear Flashes at the University of Chicago.

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# The Center for Astrophysical Thermonuclear Flashes

- **FLASH IO Benchmark can test either HDF5, Parallel NetCDF or a direct Fortran write**
- **Uses same FLASH code IO used in production runs**
- **This study:**
  - **HDF5 parallel library**
  - **Weak scaling, grow size of problem as processors increase**
  - **Each processor writes out 9 double variables of a 96 cubed block plus some metadata**
    - **~64MB per processor**
    - **Same problem size per processor as large FLASH BG/L run**
  - **Variable data written as 4 dimensional datasets**

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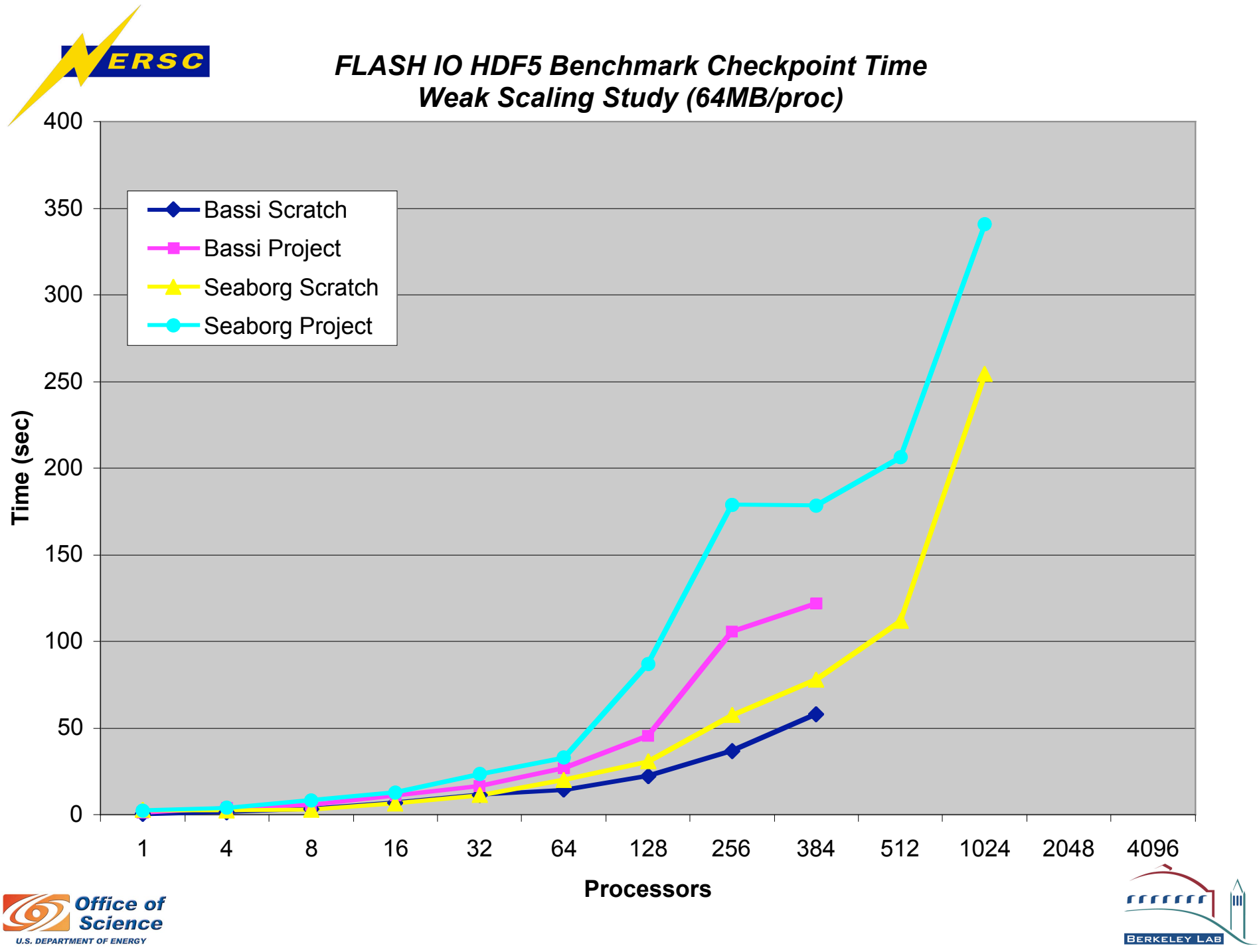
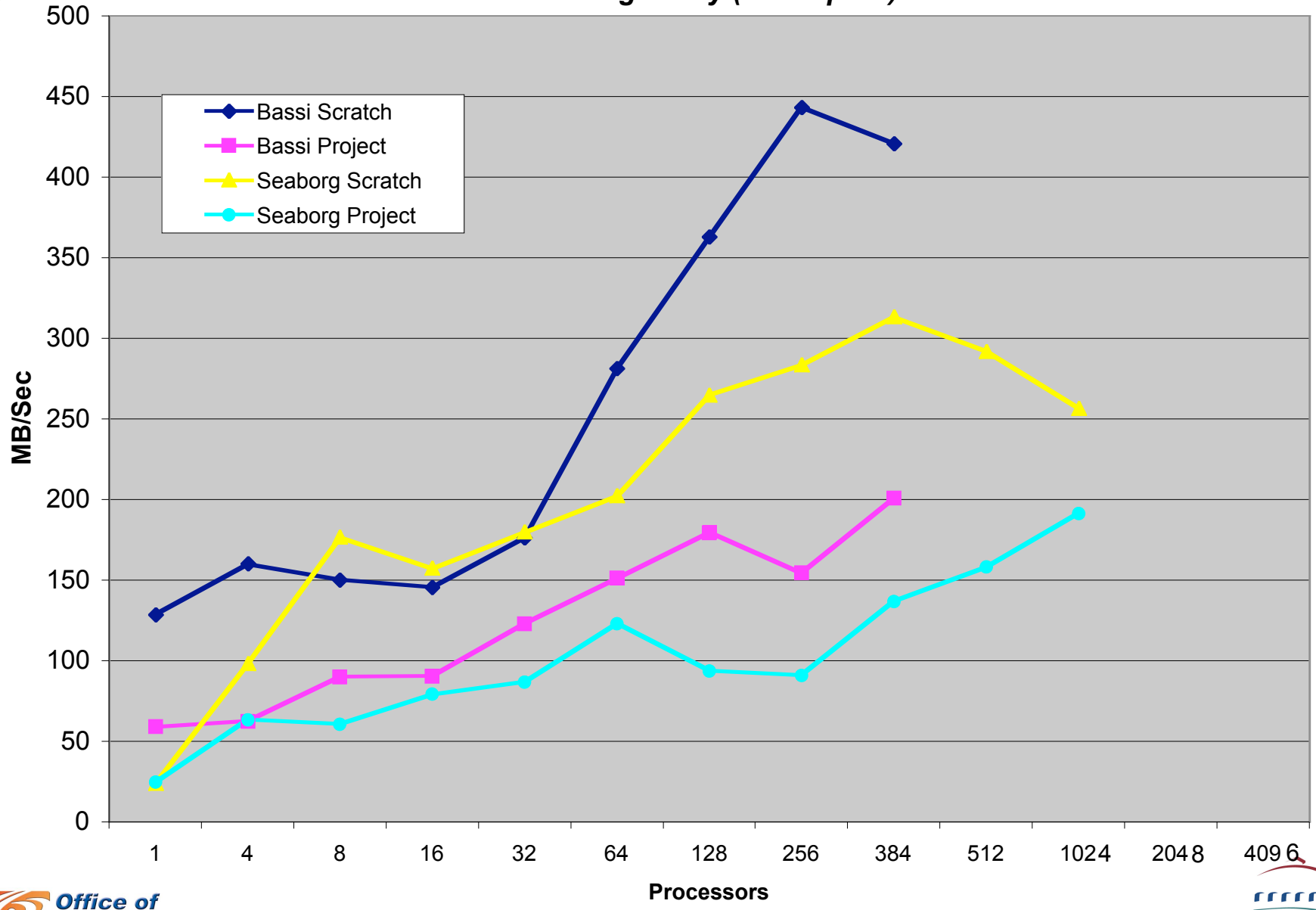
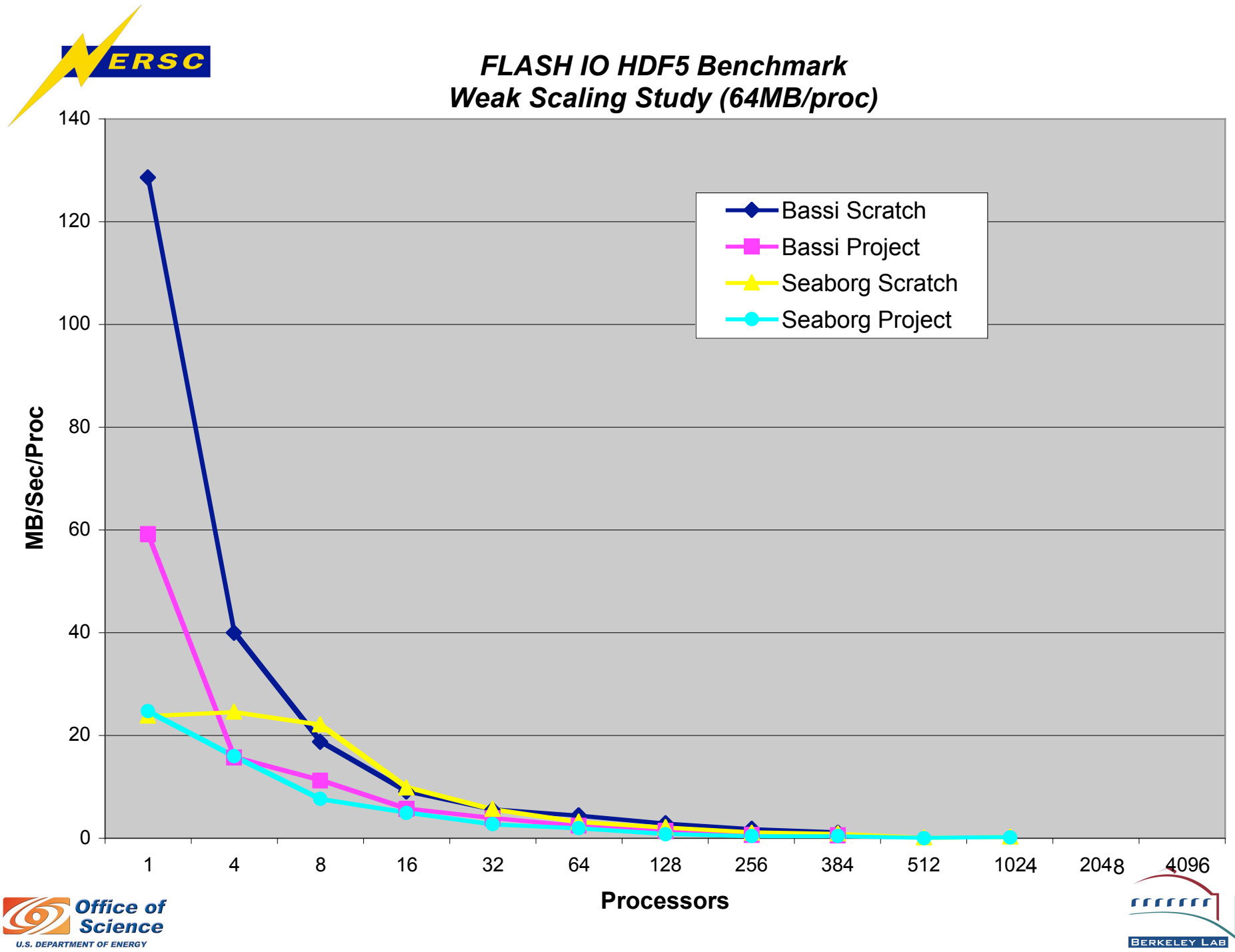

FLASH IO HDF5 Benchmark Checkpoint Time
Weak Scaling Study (64MB/proc)
Time (sec)
400
350
300
250
200
150
100
50
0
Bassi Scratch
Bassi Project
Seaborg Scratch
Seaborg Project
1
4
8
16
32
64
128
256
384
512
1024
2048
4096
Processors


FLASH IO HDF5 Benchmark
Weak Scaling Study (64MB/proc)
MB/Sec
Processors
Bassi Scratch
Bassi Project
Seaborg Scratch
Seaborg Project
0
50
100
150
200
250
300
350
400
450
500
1
4
8
16
32
64
128
256
384
512
1024
2048
4096


FLASH IO HDF5 Benchmark
Weak Scaling Study (64MB/proc)
MB/Sec/Proc
140
120
100
80
60
40
20
0
1
4
8
16
32
64
128
256
384
512
1024
2048
4096
Processors
Bassi Scratch
Bassi Project
Seaborg Scratch
Seaborg Project